

WHAT IS CLAIMED IS:

- 1 1. A method of determining local relative z-ordering information, the method comprising:
  - 2 (a) obtaining a first image frame and second image frame containing digital image data;
  - 3 (b) dividing the first image frame and second image frame into segments;
  - 4 (c) matching segments of the first image frame to the second image frame, and
  - 5 matching segments of the second image frame to the first image frame;
  - 6 (d) determining relative offsets for the segments that represent a relative displacement
  - 7 of the segments between image frames; and
  - 8 (e) determining for either of the image frames which segments in that frame would
  - 9 overlap if the segments were moved by their relative offsets.
- 10 2. The method of claim 1, further comprising determining, for segments that from step (e)
- 11 are determined would overlap if moved by their relative offsets, a relative z-ordering.
- 12 3. The method of claim 2, further comprising breaking any cyclical relationships.
- 13 4. The method of claim 1, wherein segments are each of substantially uniform color and are
- 14 embodied in a plurality of geometries and areas.
- 15 5. The method of claim 2, wherein step (e) comprises considering groups of two or more
- 16 matched segments which share a common boundary, the segments being matched using a
- 17 forward or backward matching routine.
- 18 6. The method of claim 2, wherein z-ordering relationships between segments are created by
- 19 considering a plurality of segments in the first image frame which would overlap when
- 20 moved by their relative offsets determined in step (d), placing segments over one another
- 21 and comparing the results with the second image frame to calculate difference
- 22 parameters, and determining z-ordering relationships from the difference parameters.
- 23 7. The method of claim 6, wherein an error minimization technique is used.
- 24 8. The method of claim 3, wherein the cyclical relationships are broken by:

- 2 (a) obtaining a sequence of segments which share a cyclical z-ordering relationship;  
3 and  
4 (b) canceling the weakest relationships between segments until the cyclical relationship  
5 is broken.
- 1 9. The method of claim 8, wherein the strength of a relationship between segments is based  
2 on a difference of average errors.
- 1 10. The method of claim 8, wherein the strength of relationships between segments is based  
2 on any suitable statistical parameter.